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The Influence of Scarcities and of the High Prices of Wheat on the Mortality of the People of England.

[Paper read by WILLIAM FARR, F.S.S., 16th February, 1846.]

THE Council of the Statistical Society have permitted me to occupy a few minutes of your time this evening; to submit to you a series of facts which I have had occasion to collect; and thus to give you an opportunity of discussing this question, and expressing any opinion which you may have formed, from research or observation, on a matter of unquestionable importance. Physiologists tell us, that man, from the analogies of his anatomical structure, is evidently "destined for a mixed kind of aliment, of vegetable and animal origin;" and agree with Dr. Prout, that a sound dietary should always comprise the three kinds of substances provided in milk—1, saccharine matter; 2, butter or fat; and 3, curdy matter, albumen, or flesh. In this as in many other matters, common sense—or instinct—has been beforehand with the physiologists; and we find mankind in all ages eating grain, or flesh, or both, in quantities varying with the climate, their necessities, and circumstances. A predilection for the "roast beef of Old England" dates from an earlier period in this "favoured isle" than our Common Law; and the sirloin figures in old feasting songs: but bread—rye bread, barley bread, and chiefly wheat bread—has been the "staff of life" of the people; although its artificial dearness in the present century has led to a more extensive consumption of the potato than the alimentary merits of that tuber, excellent as it is, justify.

If we may judge from the habits of the best and most vigorous races, man would appear to be able to live on great varieties of food; but in respect to the quantity of nutritive matter the law of his system is less flexible. In the cold, or engaged in hard work, he requires a large quantity of nutriment, and he soon becomes unable to take active exercise, if the supply fall below a given point. Dalton—and subsequently Liebig—have shown that a certain number of ounces of carbon is burnt in the body, to keep up its slightly-varying temperature; and that nitrogenous matter is required to replace the particles destroyed in the evolution of sensation, muscular action, and the other functions. "A healthy man cannot abstain from food a whole day, without great prostration of strength, nor scarcely beyond eight days without danger to life*." Persons have survived from eleven days to fourteen days without food. Hippocrates has remarked, "that most of those who abstained seven days die within that period; and, if they do not, and are even prevailed upon to eat and drink, that still they perish†." This has been confirmed by observations on men, and cruel experiments on animals. It is important to bear in mind, that in total abstinence, life is not extinguished immediately—and that in partial starvation the morbid effects may not be developed for some weeks—and that after their appearance the fever burns on, despite of the means employed to assuage it.

It will not be necessary to enumerate the physical changes produced by privation; but the effects on the mental condition are thus accu-

* "Blumenbach," by Elliotson, p. 53.

† Elliotson, p. 53.

rately summed up by Mueller:—"They are feelings of general debility, actual and gradually increasing loss of strength, fever, delirium, and violent passions, alternating with the deepest despondency*." Shipwrecks and sieges, and disastrous campaigns, supply many examples; but if I have time, I will give instances of these effects, produced by partial privations, on the tempers and passions of nations.

I some time ago examined nearly all the English chroniclers and historians, from Bede and the Saxon chronicle down to Stowe and Holinshed, and extracted all the passages in which scarcities, famines, or epidemics are mentioned. Sir Frederick Eden and Fleetwood† have brought together many of the passages in which prices occur, and a good summary of the results is found in Adam Smith's *Wealth of Nations*, by M'Culloch. No correct average prices can be deduced from the few data left on record before the 17th century; and there are no numerical statements of the deaths. The effects of famine were, however, too evident to admit of mistake, or even of exaggeration. I have translated the passages literally, that you may be in a position to judge of the extent of the devastations of hunger, as it was named by the Saxons, and determine from the painful, sad, and almost monotonous narrative, the kind of connexion existing up to the end of the 14th century, between failures of the crops, high prices, and the health and happiness of the people.

Famines recorded in the early English Chronicles.

9TH CENTURY.

A.D.

822 A severe famine. (Asser. Annals.)

10TH CENTURY.

975 Famine scourged the hills. (Saxon Chronicle, by Ingram, whose translation is adopted throughout.)

976 This year was the great famine (*micla hungor*) in England. (Ibid. and Chron. John of Brompton.)

11TH CENTURY.

1004 The English were not without a plague, for such a famine prevailed as no man could remember. (Henry of Huntingdon *Rer. Anglic. Script.* ab H. Savillo, p. 360.)

1005 This year was the great famine in England. Sweyne the Dane left England on account of this dearth. (Saxon Chronicle. Ranulph de Diceto, A.D. 1013.)

1042 About this time such a famine came on that the sextarius of wheat, which is usually a load for one horse, sold for five solidi and more. (Henry of Huntingdon, p. 365.)

1069 The Normans desolating England, a great famine prevailed last year in Northumberland and some other provinces; but in this and the following year it spread all over England, so that man, driven by hunger, ate human, dog, cat, and horse flesh; some, to sustain a miserable life, sold themselves as slaves, while others, falling down on their way to exile, expired. It was horrible to see in the houses and streets, and by the road sides, human bodies wasting away, putrid, and filled with worms. The soil, without cultivators, lay everywhere a wide solitude for nine years. Between York and Durham there was no inhabited town; only the dens of wild beasts, and thieves terrified the traveller. (Simeon Dunelm. Hist., p. 199, Script. Savill. Ranulph de Diceto. *Annal. Waverl.*)

1070 A great famine. (*Annal Waverl.*, p. 130.)

* "Mueller's Physiology," by Baly, v. i., p. 531.

† "History of the Poor," and the "Chronicon Preciosum."

- 1073 A famine followed by a mortality so fierce, that the living could take no care of the sick, nor bury the dead. (Henry of Huntingdon.)
- 1086 A great murrain of animals, and such intemperate weather, that many died of fever and fanine. Nearly all the chief cities of England were consumed by fire: the church of Saint Paul's and great part of London were burnt down. (Henry de Knyghton, p. 2353.)
- 1087 After the birth of our Lord and Saviour Christ, one thousand and eighty-seven winters, in the one and twentieth year after William began to govern and direct England, as God granted him, was a very heavy and pestilent season in this land. Such a sickness (cothe) came on men, that full nigh every other man was in this disorder; that is, in the diarrhœa (drife), and that so dreadfully, that many men died in the disorder. Afterwards came, through the badness of the weather, as we before mentioned, so great a famine over all England, that many hundreds of men died a miserable death through hunger. Alas, how wretched and how rueful a time was there! when the poor wretches lay full nigh driven to untimely death, and afterwards came sharp hunger, and dispatched them withal! Who will not be penetrated with grief at such a season? or who is so hard-hearted as not to weep at such misfortune? Yet such things happen for folk's sins, that they will not love God and righteousness. (Saxon Chron. by Ingram.) (*The chronicler goes on as a monk and a Saxon to paint the sins in the Conqueror's oppression of England.*) "Castles he let men build, and miserably swink the poor." (Annal. Waverl.)
- 1093 A great famine and mortality. (Stow's Annals, p. 132, and Matt. Paris.)
- 1096 This was a very heavy-timed year through all England, both through the manifold tributes, and also through the very heavy-timed hunger that severely oppressed this earth in the course of the year. (Saxon Chronicle.)

12TH CENTURY.

- 1111 The winter was very long, and the season heavy and severe, and through that were the fruits of the earth marred, and there was the greatest murrain of cattle that any man could remember. Birds, and wild as well as domestic animals, perished in great numbers. (Saxon Chronicle and Simeon Dunelm. Hist., p. 234.)
- 1124 Such a famine prevailed in England, that everywhere in cities, villages, and cross roads, lifeless bodies lay unburied in miserable horror. (Simeon Dunelm. Hist., p. 251.)
- 1125 In this same year was so great a flood on Saint Lawrence's-day, that many towns and men were overwhelmed, and bridges broken down, and corn and meadows spoiled withal, and famine and pestilence (cealm) in men and cattle, and in all fruits such unseasonableness as was not known for many years before. (Saxon Chronicle.)
- 1126 Incessant rains during the summer, whence followed in all England a most dire and unheard-of scarcity. A sextarius of wheat sold for twenty shillings (solidi). (Annales de Morgan, vol. ii., p. 6. Rer. Anglie. Scrip., ab H. Savillo.)
- 1162 A great famine all over the world (!). (An. de Morgan.)
- 1175 In England and the adjacent countries a pestilential distemper prevailed, so that for several days 7 or 8 dead bodies were buried, (*query, in one church-yard?*) and immediately afterwards was a dreadful dearth. (Roger de Hoveden Annal. Rer. Ang. Script. ab H. Savillo, p. 547.)
- 1176 A great famine and mortality. (An. de Morgan in Wales.)
- 1183 A severe famine afflicted both England and Wales. (Ibid.)
- 1189 A famine and great mortality. (Annal. Waverlien., p. 184.)
- 1196 Famines, through untimely rains, have now for some years grievously oppressed England and Wales. (Galliam.) The common people (*vulgus pauperum*) perished everywhere for lack of food; and on the footsteps of famine the fiercest pestilence followed in the form of an acute fever, which seized so many every day, and at last destroyed such numbers, that scarcely any were left to minister to the sick. The accustomed funeral solemnities ceased; and some one dying every hour of the day, it was hardly possible, unless a person were rich or noble, that he could be committed to his mother earth. In many places large ditches were made, into which the dead were thrown. At

the end of six months the pestilence was allayed by the rigours of winter. (Chron. of Walter Hemingford, vol. ii., p. 546, 7. Rer. Ang. Scrip., ab H. Savillo.)

13TH CENTURY.

- 1203 A great mortality and famine. The monks of Waverly were dispersed on account of the excessive dearth. Annal. Waverl., vol. ii., p. 168.)
- 1224 A very dry winter, and bad seed-time, whence followed a great famine (*fames ingens*). (Annal. Waverl., vol. ii., p. 189.)
- 1252 No rain from Whitsuntide to autumn; no grass; hence arose a severe famine, great mortality of men and cattle, dearth of grain, and scarcity of fruit. (Chron. T. Wilks, vol. ii., p. 49.)
- 1257 The inundations of autumn destroyed the fruit and grain; and, moreover, a scarcity of money, of which the kingdom was despoiled by the Pope and the King, produced unexampled poverty. This pestilential year gave birth to fatal fevers; so that in the summer, particularly in the dog-days, at St. Edmond's alone, to say nothing of other places, the spacious cemetery was occupied by more than 2,000 of the dead.
- 1258 The north wind prevailed for several months, and when April, May, and great part of June were over, scarcely a small rare flower or shooting germ appeared, whence the hope of harvest was uncertain. Moreover, food failing, (the harvest of the previous year had failed,) innumerable multitudes of poor people died, and their bodies were found lying all about swollen [*dropsical*] from want, and livid, five or six together, in the pig-sties, in muddy streets, and on dunghills. Nor did those who had homes dare to harbour the sick and dying, for fear of infection, (*propter tabem et contagia infirmorum*.)

About the Festival of Trinity the pestilence was immense—insufferable; it attacked the poor particularly. In London alone 15,000 of the poor perished; in England and elsewhere thousands died. The nobility distributed bread on certain days in London.

When the famine began, the summa of wheat in London sold for nine or more solidi. Fifty ship-loads of wheat, barley, and bread, were procured from Germany, and the citizens of London were forbidden by proclamation to purchase, that they may sell the grain again at a high price to the poor, according to their custom. The monk of Saint Alban's adds, *Quia infames habebantur dicti cives quod in tempore caristiae naves victualibus onustas vel subdolè averterunt, vel in solidum emerunt, ut ad placitum eorum ea venderent postulantibus*.

The summa bladi (corn) rose at last to fifteen shillings and more. The rich only escaped death by purchasing foreign grain; the middle classes sold their possessions; and many of honourable degree were reduced to beg from strangers, or, restrained by shame, to pass, hungry, pale, and dinnerless through the night in uncounted sighs. The harvest proved very abundant, but the grain was spoiled or not gathered. (Matthew Paris, *Historia Anglorum*, pp. 963, 968, 973, 976, 987.) Henry de Knyghton, *eodem anno* (1258.)

These famines were attributed to the scarcity of money, brought on by the exactions of the Pope and the King. (*Ibid.*, p. 958.)

- 1271 A violent tempest and inundation, followed by a severe famine, in the entire district of Canterbury. (Walt. Hemingford, *Rer. Anglic. Scrip.*, p. 593. *Mat. Paris*, p. 969.)
- 1289 A tempest destroyed the seed. In London the modius of wheat, which at first sold for three pence, then gradually rose to two shillings. For full forty years, even to the death of Edward II., such a dearth of corn (*bladi*) continued, and particularly wheat (*frumentum*), that in London the modius frumenti sold several times at ten shillings. (Walsingham, *Anglica*, &c., à *Veteribus Scripta*, ex *Bibliotheca G. Camdeni*.)
- 1294 A severe famine afflicted England, and many thousands of the poor perished. The quarter of wheat sold for sixteen shillings, and in many places for twenty shillings sterling. (Henry of Knyghton, *Rer. Ang. Script. x.*)
- 1295 This year produced no grain or fruits, so that the poor died of hunger. (Walsingham, *Camden*, p. 63.)

14TH CENTURY.

- 1315 Provisions became dear in May. Parliament attempted to fix the price; nevertheless every thing grew dearer, and in the following year of scarcity every one was allowed to sell at what price he could. The grain was spoiled by the rains, and what remained was innutritious. It is not to be concealed that while the poor wasted with hunger, the rich constantly indulged in luxurious tables. The nobles and the religious houses withheld the accustomed alms. (Walsingham, *Anglica, Hibernica, Normanica, Cambrica, à Veteribus Scripta ex Bibliotheca, G. Camdeni, 1602.*)
- 1316 An universal dearth prevailed, and such a mortality, particularly of the poor, followed, that the living could scarce bury the dead; for a dysentery, generated by corrupted food, infected nearly all, and this was accompanied by an acute fever, which reduced many to extremity. Cattle as well as men were affected. The wisdom of medical men availed not, as the herbs had lost their medicinal virtues. Horse flesh was precious to the starving poor; fat dogs were stolen and eaten; some in retired parts, *it is said*, ate their own sons and daughters; others stole new-born children to devour. Thieves in prison ate those put fresh in amongst them half alive! (Henry de Knyghton, *Rer. Ang. Scrip. x.* Walsingham and Ypodigma Neustriæ in Ang. à vet Script.)
- It was commanded by royal proclamation that no more beer should be made, and that beer should sell at a penny (denarius).
- 1341 In this year (as some write), or (according to others) in the year following, there was such a miserable dearth both in England and Scotland, that the people were driven to eat the flesh of horses, dogs, cats, and such like unused meats, to sustain their languishing lives. (Holinshed's Chronicle, vol. v., p. 380.)
- 1369 A great pestilence among men and the larger animals, followed by inundations, and extensive destruction of grain. The modius of corn sold for three shillings.
- 1390 A great famine in all parts of England, which continued from the beginning of harvest till the new grain came in: you saw children crying out on the way sides for bread, and their mothers had none to break. Such had been the fertility of the previous years, that it was calculated by many economists (*yconomiis*) that England contained grain enough in the granaries to support the population for five years (!) The scarcity among the poor was attributed to the want of money, caused by the King prohibiting our merchants from carrying the wool abroad, whence it was kept unsold for two or three years. Stow says, under this year a great pestilence was in the north parts, so that in a little space 1,100 were buried in the city of York. (Henry de Knyghton, *Scriptores x.*, p. 2609.)
- 1392 A dearth of corn for *two years*, whence it came to pass that when the time of fruits, as nuts, apples, &c., came, many people, through overfeeding thereof, caught the flux. The mayor and aldermen of London advanced money and corn at a low rate to the poor. (Stow's Annals, an. 1392.)

15TH CENTURY.

- 1437 The common price of a quarter of wheat was 4*s.* or 4*s.* 6*d.*, but in these years
- 1438 in many places it was 26*s.* 8*d.* (Chronic. preciosum.)
- 1440 A scarcity. Wheat 3*s.* a bushel in London; malt 13*s.* per quarter; oats 8*d.* per bushel. (Stow's Annals, p. 317.)
- 1545 A wonderful dearth and extreme prices. (1 and 2 Philip and Mary, c. 5.) Also see prices of wheat from 1202 to 1601 in M'Culloch's edition of Adam Smith's *Wealth of Nations*, B. I, c. xi., p. 117.

Only one famine is mentioned in the 9th; and one, of two years, duration, in the 10th century, but these records are manifestly defective. I have drawn up the following summary of the famines in each century from the 11th, and have added in brackets [], from M'Culloch's list of prices (beginning at 1202), the other years which must have been years of great scarcity or famine.

Centuries.	Number of		The Years of Famine.
	Famines.	Years of Famine.	
1001-1100	7	10	1004, 1005; 1042; 1069, 1070; 1073; 1086, 1087; 1093; 1096.
1101-1200	7	10	1111? 1124, 1125, 1126; 1162; 1175, 1176; 1183; 1189; 1196 (some years).
1201-1300	7+3	9+5	1203; [1205]; 1224; [1246, 1247]; 1252; 1257, 1258; 1271; [1286]; 1289, [1290]; 1294, 1295.
1301-1400	4+2	6+3	1315, 1316, [1317]; 1341; [1359]; [1363]; 1369; 1390, 1391.
1401-1500	+7	+8	[1401; 1416; 1434; 1439, 1440; 1486; 1491; 1497].
1501-1600	1+5	+9	[1521; 1545; 1557; 1574; 1587; 1594, 1595, 1596, 1597, 1598].

In the 11th and 12th centuries a famine is recorded every 14 years on an average, and the people suffered 20 years of famine in 200 years. In the 13th century, my list exhibits the same proportion of famines, and nearly the same number of years of famine; the addition of five years of high prices makes the proportion greater: upon the whole, the scarcities decrease during the three following centuries; but the average from 1201 to 1600 is the same,—namely, 7 famines, and 10 years of famine to a century. This is the law regulating scarcities in England.

The destruction of grain, of which famines are the result, arises from “bad seed-times,” “long and severe winters,” “droughts,” “incessant rains during summer or harvest,” “tempests,” “oppression of the cultivators of the soil,” and zymotic diseases of the wheat plant,—a great variety of phenomena generally produced by causes beyond our knowledge and control, but subject to laws which systematic, agricultural statistics will unfold. The collation of the observations loosely made by the chroniclers, on no well-considered uniform plan, but extending over several hundred years, not only establishes the existence, but indicates the nature of these laws.

The close of the 16th century was marked by the commencement of two important series of statistical observations,—the Record of the prices of Wheat in the Eton Books, and the London Bills of Mortality,—which were continued, with scarcely any interruption, through the 17th and 18th centuries. The character and nature of these returns are well known. The London Bills did not include all the deaths,—parishes were gradually added, and the population of the metropolis at any time before 1801 is unknown, so that the absolute mortality cannot be determined. The Windsor prices, taken only twice a year, do not give the real average prices of wheat all the year through in London. A comparison with the averages drawn up by the Receiver of Corn Returns, however, exhibits a general agreement, which places them beyond the reach of the disparaging criticism in the Report of one of the Parliamentary Committees.

In comparing the two series of observations, with a view of ascer-

taining whether there is any connexion between the prices of wheat and the mortality, I have taken periods of 10 years, from 1601 to 1610, 1611 to 1620, &c., up to 1800, and have arranged the years in the order of the prices, beginning with the highest, as in the annexed example.

EXAMPLE.

Year.	Price of Wheat Per Quarter.		Burials in London, according to the London Bills.	Year.	Price of Wheat Per Quarter.		Burials in London, according to the London Bills.
	<i>s.</i>	<i>d.</i>			<i>s.</i>	<i>d.</i>	
1741	47	0	32,169	1750	32	6	23,727
1746	39	0	28,157	1742	32	0	27,483
1748	37	0	23,869	1745	27	4	21,296
1749	37	0	25,516	1743	24	11	25,200
1747	34	10	25,494	1744	24	10	20,606

The deaths in the 5 years of highest prices are then compared with the deaths in the 5 years of lowest prices in the Table, and the general result is, that in the twenty decennial periods, the deaths were 1,971,076 in the 98 years of highest prices, and 1,830,835 in the 98 years of lowest prices. The excess of deaths in the years of highest prices was 140,241. The method, by taking several short equal periods, contains in itself corrections of all the errors arising from the increase of population, or progressive improvements in the metropolis, and resting only on the relative number of deaths, yields results entirely independent of the absolute mortality. See Tables I. II., pp. 168, 169.

The causes of a high mortality are various; but the greater number of known causes may be referred to five heads: 1, excessive cold or heat; 2, privation of food; 3, effluvial poisons generated in marshes, foul prisons, camps, cities; and epidemic diseases, such as typhus, plague, small pox, and other zymotic diseases; 4, mechanical and chemical injuries; 5, spontaneous disorders to which the structure of the human organization renders it liable. The three first classes of independent causes vary in intensity from year to year; and as *each* will separately produce the effect which we are investigating, namely, an increase of deaths, it must be evident that this effect will not always vary as privation or as *any one* of the class of causes. For instance, the sweating sickness, said to have broken out in Richmond's camp, spread through England, and destroyed great numbers. It was a poison in the air, and, like other poisons, its fatal action was not stopped by abundance of food, although its ravages, if aided by famine, might have been rendered more deadly. So of the black death in 1348, the plague in 1665, the cholera in 1832.

Then, low prices do not always denote plenty, nor high prices scarcity. And if high prices increase the mortality, any great mortality has a tendency to reduce the price of provisions. Thus in 1349 "the price of every kind of cattle was much reduced; they wandered about in herds without herdsmen. Corn of all kinds was so abundant that no one cared to gather it." Workmen were scarce, a "great part" of them having been destroyed, and demanded high wages.—See against the years 1348-9, Henry de Knyghton, Rymer's *Fœdera*, Walsingham, J. Barnes, Holinshed.

Those great disturbing causes and the imperfections of the returns

require for the elimination of their effects a series of observations extending through a century. The concurrent evidence of the 17th and 18th centuries appears to me to justify the inference that high prices of wheat—I mean relatively high—irrespective of the other necessities of life, had then a tendency to increase the mortality in London. I submit the facts to the Society in Tables I., II., III.

Mr. Tooke, in his valuable work on Prices, has reviewed all the years of scarcity and high prices in the 18th and 19th centuries. Mr. Tooke had no theory to support on this subject which did not fall within the scope of his work. I therefore take the periods upon which he has fixed to test the effects of dearth. He mentions *seven* periods of various degrees of dearth in the 18th century, exclusive of 1800, which is connected by 1801 with the 19th century: 1709 and 1710 were years of “great dearth;” in 1727, 1728, 1729, “some degree of dearth” was felt; 1740 was “felt as a year of dearth;” “thousands of acres remained unsown in 1756”—there was “a scarcity of corn and a high price of provisions;” in 1766 there was “deariness of provisions;” the quartern loaf in London was at one time as high as 18*d.*; [at Windsor prices were highest in 1767;] the five years 1770-4 are said to have had “unproductive harvests*.” The table (IV., p. 172) presents a comparative view of the deaths reported in the London bills before and after the years mentioned by Mr. Tooke. The correspondence, as might be expected, between the high and low prices, and high and low rates of mortality, is only general.

Mr. Rickman procured from the clergy, returns of the burials at the Established Churches for each year from 1780 to 1830. The returns are incomplete, but they serve to show the relative mortality all over the country in consecutive years. Thus we find that the “partial deficiency” of the harvest of 1794 was followed by scarcity and an increase of deaths in 1795. The harvest was favourable in 1793. The prices in 1794 were 53*s.* 4*d.* per imperial quarter; the burials, 197,740. In 1794 there was a partial deficiency. Prices in 1795 were 76*s.* 6*d.* per imperial quarter; burials rose to 210,339.

In 1799 and 1800 the seasons were “bad,” and the dearth of 1800 and 1801 produced great distress. Committees of both Houses of Parliament were appointed to inquire into the means of supplying the people with food; and with the scarcity a typhus epidemic took its rise concurrently, which was inquired into by a Committee of the House of Commons. The prices and burials returned during the five years 1798-1802 were

Average Prices of the Winchester Quarter of Wheat. Windsor Prices.				Corn Returns.		Burials in England.
	<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>	
1798	54	0	.....	50	3	..... 187,531
1799	75	8	.....	67	6	..... 189,586
1800	127	0	.....	113	7	..... 208,063
1801	128	6	.....	118	3	..... 204,434
1802	67	3	.....	67	5	..... 199,889

* “The King’s Speeches,” “Corn Tracts,” and other original authorities, are cited by Mr. Tooke. A little confusion in the dates is apparently caused by the earlier writers making their year terminate in March. Thus the *winter* of 1709, new style, is the winter of 1708, old style.

Prices of Wheat, and the Mortality in the 19th Century.

The price of an imperial quarter of wheat on an average of ten years, never exceeded 48s. 4d. (See Table III.) before the ten years 1791-1800. I exclude the incomplete returns for the ten years 1641-50. For the ten years 1801-10, the average price was 80s. 6d., and for the ten years 1811-20, 77s. 5d. the imperial quarter. The average price of wheat during the twenty years was nearly twice as high as it had ever been during an equal number of years. Now the price varies as the value of wheat, and inversely as the value of the circulating medium; and this elevation of price might be caused either by wheat becoming scarcer, the demand remaining the same, or by the redundancy and reduced value of the circulating medium. The two causes were probably in operation during the first ten years; but I think there can be no doubt that the issue of paper money—inconvertible into gold from 1797 to 1821—was a chief cause of the average price of wheat so far exceeding anything ever before witnessed. If such a change had been made suddenly in the *value* of money by the discovery of mines of gold, or of paper which could be made to pass as the equivalent of gold—that 20 shillings would purchase no more of any article in the twenty years 1801-20, than 10 shillings would purchase previously—the average prices 80s. 6d. and 77s. 5d. would be really equivalent to 40s. 3d. and 38s. 9d., before the Bank Restriction Act. I give this merely as an illustration, and to show that the fluctuations in price had the same range.

Years.	Average Price of the Quarter of Wheat.		Average Price in any year.	
	s.	d.	Highest. s. d.	Lowest. s. d.
1761-70	40	3	54 2	25 5
1801-10 (prices in bullion)	80	6	111 10	56 9
1801-10 (prices divided by 2) 40 3	40	3	55 11	23 5
1621-30	37	11	49 3	23 6
1811-20 (prices in bullion)	77	5	102 6	55 3
1811-20 (prices divided by 2) 38 8	38	8	51 3	27 8

I shall recur to this point. In the mean time it must be borne in mind, that the argument rests on the relative, and not on the absolute prices in periods of ten years; which may, it is true, have been deranged by the progressive change in the value of money. The great number of men in the prime of life, employed in the public service, the enormous expenditure, and the progress of manufactures, increased the demand for labour, and ultimately caused wages to rise. In 1801-10 no less than £179,000,000, in 1811-17, £193,500,000 of debt were contracted. These sums, and the taxes raised were all expended, and the people of 1793-1817 left charged on succeeding generations £600,000,000 of debt, the annual interest of which, in 1817, was £22,830,000*. All classes anticipated and expended, by means of the existing credit and unpayable "promises to pay" their future incomes and the incomes of their successors. The public, like a private spendthrift, felt the distress, and suffered the results, not when it was expending the money and paying high nominal prices, but when it was called upon to fulfil its promises and to pay its debts in 1823 and the subsequent years.

* See M'Culloch's "Statistics of the British Empire."

The Table V. p. 171, is deduced from the Returns of Church Burials and of Population, published in the Census volumes for 1831 and 1841. The Church Burials in England during the three years 1838-40, are ascertained to have been only 85 per cent. of the total deaths registered. Assuming that the deficiency in the Burial Returns was the same, or 15·103 per cent., the Table shews the mortality of females in each year from 1801 to 1844. The mortality was lowest in 1817, and amidst great fluctuations advanced as high as 2·520 per cent. in 1837, the year that influenza was epidemic. I have preferred taking the mortality of females for the comparison, as it is less easy to determine the true mortality of males, the number of males absent from England having varied considerably during the war, and subsequent peace. In the twenty years 1801-20 the mortality was highest in the two five years of lowest prices. It was the same in the ten years 1831-40.

The facts are analyzed in Table VII., p. 173, where the three years of highest and the three years of lowest prices in each decennium are separated from the four years of medium prices.

Mr. Barton has, I see, in a small tract, advanced the theory, that the mortality is lowest when prices are at a certain medium: the figures in the first decennium support his view, which is, however, entirely at variance with the facts in the three following decennial periods, and with the results of seven years' returns of the numbers of *deaths*, free from the errors incidental to calculations of the mortality, founded upon the church *burials*, which may vary from other causes than differences in the mortality.

Up to 1837 the Registers of Deaths were imperfect. The rate of mortality could only be obtained approximately. The registration under the new system is complete; and with the Censuses of 1831 and 1841, enables us to calculate the proportion of deaths to the increasing population of each year. The results are given in Table IX., p. 174. Taking the three first and the three last years, which are the years of highest and lowest prices, it will be found that the mortality in Yorkshire, Cheshire, Lancashire, and all England, was highest when the prices of wheat were highest.

Average annual Deaths to 100,000 of the Population, in the three years when the prices of Wheat were

	Highest.	Lowest.
Yorkshire	2239	2147
Lancashire and Cheshire	2789	2468
England	2270	2110

The difference in these rates implies a difference of many thousands in the deaths of the whole country. Out of the same population in Lancashire and Cheshire, for every *seven* deaths in the years of low prices, *eight persons died* in the years of high prices. The mortality was higher in the agricultural counties in the three years when the average price of wheat was high, than in the years when the price of wheat was allowed to fall nearer the natural average which prevailed through the two preceding centuries. For all England, out of the same population, the funerals in the three years of high prices, were 14 to every 13 in the three years of lower prices, approaching the natural standard.

TABLE I.

Prices of Wheat at Windsor Market, and the Burials in London.

YEARS.	Average Price of Wheat per Quarter, (of 72 Gallons, Winchester), from the Eton Books.						Burials, from the London Bills of Mortality.	
	Average of 10 Years.	Highest.	Lowest.	Mean of the Annual Averages.		In the 5 Years when Wheat was Highest.	In the 5 Years when Wheat was Lowest.	
				The 5 Highest Years.	The 5 Lowest Years.			
1601-10	s. d. 37 10	s. d. (1608) 56 8	s. d. (1602) 29 4	s. d. *44 10	s. d. *33 9	*35,219	*64,470	
1611-20	41 2	(1613) 48 8	(1620) 30 4	45 7	36 8	40,650	41,022	
1621-30	45 2	(1622) 58 8	(1628) 28 0	53 6	36 10	92,892	44,564	
1631-40	54 9	(1631) 68 0	(1640) 44 8	59 2	50 4	64,837	54,582	
1641† & 1646-50)	68 7	(1648) 85 0	(1646) 48 0	80 7	56 7	29,224	39,981	
1651-60	49 6	(1651) 73 4	(1654) 26 0	62 1	36 11	67,938	61,066	
1661-70	48 11	(1662) 74 0	(1667) 36 0	58 11	38 10	168,449	84,353	
1671-80	50 9	(1674) 68 8	(1676) 38 0	59 10	41 7	98,357	92,811	
1681-90	39 1	(1681) 46 8	(1687) 25 2	45 6	32 9	114,007	109,619	
1691-1700	55 11	(1698) 68 4	(1691) 34 0	65 1	46 9	104,675	103,025	
1701-10	43 1	(1709) 78 4	(1706) 26 0	56 2	29 10	111,115	103,496	
1711-20	44 11	(1711) 54 0	(1719) 34 11	49 11	39 11	113,093	126,002	
1721-30	42 0	(1728) 54 4	(1723) 34 8	47 8	36 4	141,120	133,802	
1731-40	37 6	(1740) 55 0	(1732) 26 8	42 9	32 2	135,815	129,110	
1741-50	33 8	(1741) 47 0	(1744) 24 10	39 0	28 4	135,205	118,312	
1751-60	42 10	(1757) 60 0	(1755) 33 8	49 1	36 7	99,522	105,075	
1761-70	47 11	(1767) 64 6	(1761) 30 3	55 4	40 6	115,826	118,581	
1771-80	55 1	(1773) 66 6	(1779) 40 9	61 10	48 4	110,887	103,718	
1781-90	57 7	(1790) 63 3	(1786) 47 6	61 8	53 6	93,562	99,128	
1791-1800	77 11	(1800) 142 10	(1791) 55 6	96 0	59 10	98,683	98,118	

* No return of burials in the two years 1601, 1602. The returns are therefore for the eight years 1603-10. The prices in the *two preceding columns* are for the four highest and the four lowest years in the eight.

† No returns of prices during the Civil Wars, 1642-45.

The Eton prices (1771-1820) of the quarter of 72 gallons (Winchester) are 23 per cent. above the average of the "Receiver of Corn Returns," computed on 64 gallons, Winchester; consequently, assuming the Corn Returns to represent the true averages of all qualities of Wheat, the

Average Price of the (Imperial) Quarter was 40s. 7d. in the 17th century.

„ „ 40s. 6d. in the 18th century.

40s. 6d. the Imperial quarter, or 5s. a bushel, appears to be the natural average price of wheat in England, with a metallic and a regulated, convertible paper currency.

The prices of wheat (Table I) in the two centuries 1601-1800, are from the Eton Books of the prices in Windsor Market at Lady-day and Michaelmas (Preface to RICKMAN'S *Population Returns*, 1831, p. li.) The average of the Eton prices from 1771 to 1820 was

£3·969, the average of the Returns to the Corn Receiver during the same period was £3·230: hence the Eton prices have been reduced throughout in the ratio of $\frac{3\cdot230}{3\cdot969} \times 1\cdot0315157$, to render them comparable with the subsequent averages. The last factor raises the Winchester to the Imperial standard. (Table III., p. 170.)

The bushel at Windsor was of 9 gallons Winchester; and 9 Winchester gallons are to 8 Imperial gallons as $9 : 8\cdot2521256 = 1 : \cdot9169$. For the correction of the measure the Windsor prices must therefore be reduced 8·31 per cent.; the further reduction of 7·74 per cent. being for *quality of grain*, for difference of the markets, or for the different modes of taking the average. The price in the Eton Books being £1·0000

·9169 correction for quantity.

·8395 correction for quantity and quality.

Prices of Wheat in Windsor Market, from the Eton Books.

Average prices of 72 gallons of wheat, Winchester measure:

	s.	d.
17th century	48	4
18th century	48	3

Average prices of 64 gallons of wheat, imperial measure:

	s.	d.
17th century	44	7
18th century	44	6

	s.	d.
Average prices of 64 gallons of wheat, imperial measure, reduced in the ratio the Windsor prices bore to the average prices given by the Receiver of Corn Returns, 1771-1820	40	7
The average prices at Dantzic during the ten years 1831-40 were	40	6
	41	7

TABLE II.

*Prices of Wheat at Windsor Market and the Burials in London.
(17th and 18th Centuries.)*

	Average Price of Wheat per Quarter, (of 72 Gallons, Winchester) from the Eton Books.					Burials, from the London Bills of Mortality.		Excess of Burials in the years when Wheat was dear.
	Average of the Century.	Highest Year.	Lowest Year.	Mean of Annual Averages.		In the 48 and 50 years when Wheat was highest.	In the 48 and 50 years when Wheat was lowest.	
				Ten of the 5 highest years.	Ten of the 5 lowest years.			
17th Century, (96* years) ..	<i>s. d.</i> 48 4	<i>s. d.</i> (1648) 85 0	<i>s. d.</i> (1687) 25 2	<i>s. d.</i> 56 4	<i>s. d.</i> 40 4	816,248	695,493	120,755
18th Century ..	48 3	†(1800) 142 11	(1744) 24 10	55 11	40 6	1,154,828	1,135,342	19,486
17th and 18th Centuries ..	48 4			56 2	40 5	1,971,076	1,830,835	140,241

* The returns were interrupted during the years of the Civil Wars, 1642-45.

† Exclusive of the last 10 years of the 18th century the maximum price attained was 78s. 4d. in 1709.

The prices in Table III from 1801 to 1820 have been reduced to the prices in bullion, by the Table in M'CULLOCH'S *Dictionary*, Article, Bank.

TABLE III.

Average of the Highest and Lowest Prices of Wheat during each period of 10 Years, 1601 to 1845, compared with the corresponding Mortality.

1601—1800. (Imperial Measure—from Eton prices corrected for quality and quantity, &c., of Grain, by a comparison with the Returns published by the Receiver—1771—1820.)

1801—45. The price of the Imperial Quarter deduced from Corn Returns. Prices stated in bullion from 1801 to 1820.

Years.	Average of 10 Years.		Average of 5 Highest.		Average of 5 Lowest.		Highest.		Lowest.		Burials, from the London Bills of Mortality.			
											In the 5 years when Wheat was highest.	In the 5 years when Wheat was lowest.		
	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>	<i>s.</i>	<i>d.</i>		<i>s.</i>	<i>d.</i>					
1601-10	31	9	36	1	27	5	(1608)	47	7	(1602)	24	7	35,219	64,470
1611-20	34	6	38	4	30	9	(1613)	40	10	(1620)	25	6	40,650	41,022
1621-30	37	11	44	11	30	11	(1622)	49	3	(1628)	23	6	92,892	44,564
1631-40	46	0	49	8	42	3	(1631)	57	1	(1640)	37	6	64,837	54,582
1641, 6-50 (6 years)	57	7	67	7	47	6	(1648)	71	4	(1646)	40	4	29,224	39,981
1651-60	41	6	52	1	31	0	(1651)	61	7	(1654)	21	10	67,938	61,066
1661-70	41	0	49	6	32	7	(1662)	62	1	(1667)	30	3	168,449	84,353
1671-80	42	7	50	2	34	11	(1674)	57	8	(1676)	31	11	98,357	92,811
1681-90	32	10	38	2	27	6	(1681)	39	2	(1687)	21	1	114,007	109,619
1691-1700	46	11	54	7	39	3	(1698)	57	4	(1691)	28	6	104,675	103,025
1701-10	36	2	47	2	25	1	(1709)	65	9	(1706)	21	10	111,115	103,496
1711-20	37	8	41	11	33	6	(1711)	45	4	(1719)	29	4	113,093	126,002
1721-30	35	3	40	0	30	6	(1728)	45	7	(1723)	29	1	141,120	133,802
1731-40	31	5	35	11	27	0	(1740)	46	2	(1732)	22	5	135,815	129,110
1741-50	28	3	32	8	23	9	(1741)	39	6	(1744)	20	10	135,205	118,312
1751-60	36	0	41	3	30	9	(1757)	50	4	(1755)	28	3	99,522	105,075
1761-70	40	3	46	5	34	0	(1767)	54	2	(1761)	25	5	115,826	118,581
1771-80	46	3	51	11	40	7	(1773)	55	10	(1779)	34	2	110,887	103,718
1781-90	48	4	51	9	44	11	(1790)	53	1	(1786)	39	11	93,562	99,128
1791-1800	65	5	80	7	50	3	(1800)	119	11	(1791)	46	7	98,683	98,118
Annual Mortality in England.														
Prices from Corn Returns.												Per Cent.	Per Cent.	
1801-10	80	6	94	0	66	11	(1801)	111	10	(1803)	56	9	2-287	2-356
1811-20	77	5	91	8	63	2	(1812)	102	6	(1815)	55	3	2-055	2-095
1821-30	59	4	64	8	53	11	(1825)	68	7	(1822)	44	7	2-183	2-150
1831-40	56	11	65	4	48	7	(1839)	70	8	(1835)	39	4	2-219	2-262
1841-45 (5 years)	54 9		....				(1841)	64	4	(1843)	50	1	2-067 (4 years.)	

This Table, chiefly derived from Table I., is new, and enables us to compare the money prices of the same measure (Imperial) and quality of wheat, during 245 years. The calculations were made, as above explained, in duplicate, by Mr. W. Clode and Mr. T. Roberts.

TABLE V.—Average Price of Wheat per Imperial Quarter, and Annual Rate of Mortality (Females) 1801-44.

Year.	Average Price of the Imperial Quarter of Wheat in England, from the Corn Returns.		Annual Mortality, (of Females).			Average Price of Wheat in Bullion.	
			Per Cent.	Nearly One in			
	s.	d.				s.	d.
1801	122	1	2·619	38	Dearth and Typhus.	111	10
1802	69	6	2·517	40		64	6
1803	58	3	2·506	40		56	9
1804	62	0	2·189	46		60	4
1805	90	7	2·173	46		88	2
1806	81	6	2·168	46		79	4
1807	75	7	2·297	44		73	7
1808	81	6	2·273	44		79	4
1809	98	7	2·139	47		96	0
1810	109	6	2·335	43		94	9
1811	97	6	2·083	48		89	10
1812	129	5	2·071	48		102	6
1813	112	2	2·003	50		86	6
1814	76	4	2·189	46		57	2
1815	66	0	2·053	49		55	3
1816	78	3	2·105	48		65	2
1817	97	9	1·997	50		95	1
1818	86	9	2·121	47		84	5
1819	75	4	2·107	47		71	11
1820	67	11	2·021	49		66	2
1821	56	2	2·007	50			
1822	44	7	2·058	49			
1823	53	5	2·188	46			
1824	64	0	2·198	45			
1825	68	7	2·260	44			
1826	58	9	2·347	43			
1827	56	9	2·152	46			
1828	60	5	2·162	46			
1829	66	3	2·205	45			
1830	64	3	2·090	48			
1831	66	4	2·252	44			
1832	58	8	2·398	42	Asiatic Cholera Epidemic.		
1833	52	11	2·300	43	Asiatic Cholera Epidemic.		
1834	46	2	2·213	45			
1835	39	4	2·148	47			
1836	48	6	2·127	47			
1837	55	10	2·520	40	Influenza Epidemic.		
1838	64	7	2·140	48			
1839	70	8	2·096	48			
1840	66	4	2·205	45	(From Returns of Deaths under the Registration Act.)		
1841	64	4	2·083	48			
1842	57	3	2·095	48			
1843	50	1	2·041	49			
1844	51	3	2·074	48			
1845	50	10	....	....	

The prices, 1801-20, set forth by the Receiver of Corn Returns, and taken from M'Culloch's *Commercial Dictionary* (Art. Corn Laws), have been multiplied by 1·03, &c., as a correction for the Imperial measure. The Returns from 1821-35 are from M'Culloch also; those from 1836-45 have been kindly supplied by Mr. Porter.

The Imperial quarter is the measure throughout the Table III, and the prices represent those under the averages of the Receiver of Corn Returns. The deaths up to 1800 are from the London Bills; the mortality of females, from that date to 1837, is from the returns of burials and of the population for all England.

TABLE IV.
(Referred to p. 165.)

Years.	Price of wheat per Imperial Quarter*.	Burials in London.	Years.	Price of Wheat per Imperial Quarter.	Burials in London.
	<i>s. d.</i>			<i>s. d.</i>	
1708	41 4	21,291	1754	34 8	22,696
1709	78 4	21,800	1755	33 8	21,917
1710	78 0	24,620	1756	45 3	20,872
1711	54 0	19,833	1757	60 0	21,313
1712	46 4	21,198	1758	50 0	17,576
1726	46 0	29,647	1764	46 9	23,202
1727	42 0	28,418	1765	54 0	23,230
1728	54 4	27,810	1766	48 6	23,911
1729	47 6	29,722	1767	64 6	22,612
1730	36 6	26,761	1768	60 6	23,639
1738	35 6	25,825	1770	49 0	22,434
1739	37 4	25,432	1771	57 0	21,780
1740	55 0	30,811	1772	66 0	26,053
1741	47 0	32,169	1773	66 0	21,656
1742	32 0	27,483	1774	62 0	20,884
1743	24 11	25,200			

* Deduced from the Eton Returns.

TABLE VI.

Annual Rate of Mortality in England and Wales (Females), average Price of Wheat per Imperial Quarter (from the Corn Returns—prices not reduced to bullion), and Years when Prices were Highest and Lowest, from 1801 to 1845.

Years.	Annual Mortality.		Average price of Wheat per Quarter (Imperial).	Year of Highest Prices.	Year of Lowest Prices.
	One in	Per Cent.			
1801–10	43	2·322	<i>s. d.</i> 84 11	<i>s. d.</i> (1801) 122 1	<i>s. d.</i> (1803) 58 3
1811–20	48	2·075	88 10	(1812) 129 5	(1815) 66 4
1821–30	46	2·167	59 4	(1825) 68 7	(1822) 44 7
1831–40	45	2·240	56 11	(1839) 70 8	(1835) 39 4
1841–45 (5 years)	48	2·067	54 9	(1841) 64 4	(1843) 50 1
1801–45	46	2·186	70 6	129 5	39 4

TABLE VII.

Years.	Annual Mortality.		Average price of Wheat per Quarter (Imperial).	Highest Year.	Lowest Year.
	One in	Per Cent.			
1801-20	45·5	2·199	<i>s. d.</i> 86 11	<i>s. d.</i> (1812) 129 5	<i>s. d.</i> (1803) 58 3
1821-40	45·4	2·204	58 2	(1839) 70 8	(1835) 39 4

TABLE VIII.

Years.	Average prices of Wheat per Imperial Quarter (in Bullion, 1801-20).	Average Annual Mortality per Cent.	Periods of 10 Years.
1801, 1809, 1810	<i>s. d.</i> 100 10	2·364	1801-10. In which the prices of Wheat were highest. Fever epidemic in 1801, continued through 1802 and 1803, after the prices of Wheat had gone down.
1805, 1806, 1808, 1809	80 1	2·228	In which the prices of Wheat were medium.
1802, 1804, 1803	60 6	2·404	" " " lowest.
1812, 1817, 1811	95 10	2·050	1811-20. In which the prices of Wheat were highest.
1813, 1818, 1819, 1820	77 3	2·063	" " " medium.
1816, 1814, 1815	59 2	2·116	" " " lowest.
1825, 1829, 1830	66 4	2·185	1821-30. In which the prices of Wheat were highest.
1824, 1828, 1826, 1827	60 0	2·215	" " " medium.
1821, 1823, 1822	51 5	2·084	" " " lowest.
1839, 1831, 1840	67 9	2·181	1831-40. In which the prices of Wheat were highest. (Cholera epidemic, 1832, 1833.)
1838, 1832, 1837, 1833	58 0	2·344	" " " medium.
1836, 1834, 1835	44 8	2·163	(Influenza epidemic.) " " " lowest.
			Of the 20 Years
6 years.....	67 2	2·183	1821-40. In which the prices of Wheat were highest.
8 years.....	59 0	2·280	" " " medium.
6 years.....	48 2	2·124	" " " lowest.

The mortality in the last twenty years has, according to the Table VIII., been lowest when the prices of wheat were lowest.

		Mortality.		s.	d.
1821-30	Prices highest	2·185	Prices.....	66	4
	Prices lowest	2·024	Prices.....	51	5
1831-40	Prices highest	2·181	Prices.....	67	9
	Prices lowest	2·163	Prices.....	44	8

In the twenty years 1801—20, when the currency was depreciated, the reverse was observed. But the high mortality in the first ten years was caused by an epidemic of typhus, which began in the scarcity of 1800-1, and continued after prices had fallen through 1802-3.

TABLE IX.

Annual Mortality of Males and Females compared with the prices of Wheat in England; the prices of Meat, and the rates of Wages at Greenwich Hospital.

YEARS.		1838	1839	1840	1841	1842	1843	1844
Annual Deaths to 100,000 of the Po- pulation.	{ In England and Wales	2240	2187	2290	2160	2167	2120	2155
	{ In Lancashire and Cheshire	2568	2843	2957	2541	2526	2491	2386
	{ In Yorkshire	2161	2317	2333	2164	2158	2113	2058
Average Price of Wheat		<i>s. d.</i> 64 7	<i>s. d.</i> 70 8	<i>s. d.</i> 66 4	<i>s. d.</i> 64 4	<i>s. d.</i> 57 3	<i>s. d.</i> 50 1	<i>s. d.</i> 51 3
Price of Meat, per cwt., } Greenwich Hospital		42 5	47 8	54 0	56 1	52 9	40 1	40 10
Daily Wages at Greenwich Hospital	{ Bricklayers.....	4 9	4 9	4 9	5 3	5 3	5 3	5 3
	{ Masons	5 3	5 3	5 3	5 5	5 5	5 5	5 5
	{ Plumbers	5 5	5 5	5 5	5 9	5 9	5 9	5 9
	{ Carpenters	5 5	5 5	5 5	5 8	5 8	5 8	5 8